

What is claimed is:

1           1.     An information distribution service providing  
2 system, comprising:

3           a server system which provides a plurality of mobile  
4 information terminals, carried by a plurality of users  
5 who have been registered as users of information  
6 distribution service, with the information distribution  
7 service via a communication network; and

8           a terminal of an information distribution requester,  
9 which terminal communicates with the server system and  
10 specifies a user characteristic and information  
11 distribution object areas for the users to whom information  
12 is to be distributed by the information distribution  
13 service,

14           said server system including:

15                 distribution state change monitoring means  
16 which monitors change over time in distribution of  
17 the mobile information terminals of the users with  
18 the user characteristic in the information  
19 distribution object area, based on location  
20 information of the mobile information terminal;

21                 distribution state predicting means which  
22 predicts a distribution state of the mobile  
23 information terminals in the future based on the  
24 monitoring result obtained by said distribution  
25 state change monitoring means; and

26                    information distributing means which  
27                    distributes information to the mobile information  
28                    terminals of the users based on the prediction result  
29                    obtained by the distribution state predicting means.

1                    2.     An information distribution service providing  
2                    system as set forth in claim 1,

3                    wherein said distribution state change monitoring  
4                    means includes:

5                            a distribution density calculating unit which  
6                            calculates distribution density of mobile  
7                            information terminals of the service users with the  
8                            user characteristic, in a specified block included  
9                            in the information distribution object area, based  
10                           on location information of the mobile information  
11                           terminal; and

12                           a high density distribution area detecting  
13                           unit which detects a high density distribution area,  
14                           in which the distribution density is higher than  
15                           a predetermined density, based on the calculation  
16                           result obtained by said distribution density  
17                           calculating unit,

18                    wherein said distribution state predicting means  
19                    includes:

20                           a high density distribution area movement  
21                           displacement calculating unit which calculates  
22                           movement displacement of the high density

23           distribution area detected by said high density  
24           distribution area detecting unit; and  
25                 a high density distribution area movement  
26           predicting unit which predicts a destination to which  
27           the high density distribution area moves, based on  
28           the movement displacement obtained by said high  
29           density distribution area movement displacement  
30           calculating unit, and  
31           wherein said information distribution means  
32           includes an information distributing unit of a high density  
33           distribution area prediction type, which information  
34           distributing unit selects information corresponding to  
35           the destination of movement, predicted by said high density  
36           distribution block movement predicting unit, and  
37           distributes the selected information.

1           3.     An information distribution service providing  
2           system as set forth in claim 1, wherein said information  
3           distribution means includes:

4                 a distance/arrival time estimating unit which  
5           estimates the distance and/or the time required to move  
6           from the high density distribution block to a place where  
7           the information distribution requester is located or a  
8           place specified by the information distribution requester,  
9           based on the calculation result obtained by said high  
10          density distribution area movement displacement  
11          calculating unit; and

12           an information distributing unit of a  
13 distance/arrival time estimation type, which information  
14 distributing unit distributes information corresponding  
15 to the distance and/or the arrival time estimated by said  
16 distance/arrival time estimating unit to the mobile  
17 information terminals within the high density distribution  
18 area.

1           4.     An information distribution service providing  
2 system as set forth in claim 3, wherein said information  
3 distributing means includes a distribution information  
4 recommending unit which makes recommendations with respect  
5 to to-be-distributed information corresponding to the  
6 distance/arrival time estimated by said distance/arrival  
7 time estimating unit.

1           5.     An information distribution service providing  
2 system as set forth in claim 2, wherein said information  
3 distributing means includes a high-density distribution  
4 area movement prediction result notifying unit which  
5 notifies the information distribution requester's  
6 terminal of the prediction result obtained by said high  
7 density distribution block movement predicting unit.

1           6.     An information distribution service providing  
2 system as set forth in claim 1, wherein said server system  
3 includes user reaction processing means which analyzes

4 reaction of the service users' mobile terminals to  
5 information distributed from said information  
6 distributing means, and then outputs the analysis result  
7 to an external apparatus.

1           7.     An information distribution service providing  
2 system as set forth in claim 1, wherein said distribution  
3 state predicting means includes an approximation function  
4 estimating unit which predicts the distribution state by  
5 estimating an approximation function with respect to  
6 change over time in the future distribution state based  
7 on a history of monitoring result in the past obtained  
8 by said distribution state change monitoring means.

1           8.     An information distribution method for an  
2 information distribution service providing system which  
3 includes: a server system which provides a plurality of  
4 mobile information terminals, carried by a plurality of  
5 users who have been registered as users of information  
6 distribution service, with the information distribution  
7 service via a communication network; and a terminal of  
8 an information distribution requester, which terminal  
9 communicates with the server system and specifies a user  
10 characteristic and information distribution object areas  
11 for the users to whom information is to be distributed  
12 by the information distribution service, said method  
13 comprising:

14           on the server system,  
15           monitoring change over time in distribution of the  
16 mobile information terminals of the users with the user  
17 characteristic in the information distribution object area,  
18 based on location information of the mobile information  
19 terminals;  
20           predicting a distribution state of the mobile  
21 information terminals in the future based on the monitoring  
22 result; and  
23           distributing information to the mobile information  
24 terminals of the service users based on the prediction  
25 result.

1           9.     An information distribution method as set forth  
2 in claim 8, wherein the server system performs the  
3 following:  
4           calculating distribution density of mobile  
5 information terminals of the service users with the user  
6 characteristic in a specified block included in the  
7 information distribution object area, based on location  
8 information of the mobile information terminal;  
9           detecting a high density distribution area, in which  
10 the distribution density is higher than a predetermined  
11 density, based on the calculation result;  
12           calculating movement displacement of the high  
13 density distribution area;  
14           predicting a destination to which the high density

15 distribution area moves, based on the thus-obtained  
16 movement displacement; and  
17 selecting information corresponding to the  
18 destination of movement predicted, and distributing the  
19 corresponding information.

1 10. An information distribution method as set  
2 forth in claim 8, wherein the server system performs the  
3 following:

4 estimating the distance and/or the time required to  
5 move from the high density distribution block to a place  
6 where the information distribution requester is located  
7 or a place specified by the information distribution  
8 requester, based on the movement displacement obtained  
9 by the above-mentioned calculation; and

10 distributing information corresponding to the  
11 distance and/or the arrival time estimated to the mobile  
12 information terminals within the high density distribution  
13 area.

1 11. An information distribution method as set  
2 forth in claim 10, wherein said server system makes  
3 recommendations with respect to to-be-distributed  
4 information in accordance with the thus estimated  
5 distance/arrival time to the terminal of the information  
6 distribution requester.

1           12.     An information distribution method as set  
2     forth in claim 9, wherein said server system notifies the  
3     information distribution requester's terminal of the  
4     result of prediction about a destination of the high density  
5     distribution area.

1           13.     An information distribution method as set  
2     forth in claim 8, wherein said server system analyzes  
3     reaction of the service users' mobile terminals to  
4     information distributed to the service users' mobile  
5     terminals based on the distribution state prediction  
6     result, and then outputs the analysis result to an external  
7     apparatus.

1           14.     An information distribution method as set  
2     forth in claim 8, wherein said server system predicts the  
3     distribution state by estimating an approximation function  
4     with respect to change over time in the future distribution  
5     state based on a history of monitoring result in the past  
6     distribution state.

1           15.     A server system for use in an information  
2     distribution service providing system which includes: a  
3     server system which provides a plurality of mobile  
4     information terminals, carried by a plurality of users  
5     who have been registered as users of information  
6     distribution service, with the information distribution

7 service via a communication network; and a terminal of  
8 an information distribution requester, which terminal  
9 communicates with the server system and specifies a user  
10 characteristic and information distribution object areas  
11 for the users to whom information is to be distributed  
12 by the information distribution service, said server  
13 system comprising:

14 distribution state change monitoring means which  
15 monitors change over time in distribution of the mobile  
16 information terminals of the users with the user  
17 characteristic in the information distribution object area,  
18 based on location information of the mobile information  
19 terminal;

20 distribution state predicting means which predicts  
21 distribution state of the mobile information terminals  
22 in the future based on the monitoring result obtained by  
23 said distribution state change monitoring means; and

24 information distributing means which distributes  
25 information to the mobile information terminals of the  
26 users based on the prediction result obtained by the  
27 distribution state predicting means.

1 16. A server system for use in the information  
2 distribution providing system as set forth in claim 15,  
3 wherein said distribution state change monitoring  
4 means includes:

5 a distribution density calculating unit which

6           calculates distribution density of mobile  
7           information terminals of the service users with the  
8           user characteristic in a specified block included  
9           in the information distribution object area, based  
10          on location information of the mobile information  
11          terminals;

12                 a high density distribution area detecting  
13          unit which detects a high density distribution area,  
14          in which the distribution density is high, based  
15          on the calculation result obtained by said  
16          distribution density calculating unit; and

17                 a high density distribution area movement  
18          displacement calculating unit which calculates  
19          movement displacement of the high density  
20          distribution area detected by said high density  
21          distribution area detecting unit,

22                 wherein said distribution state predicting means  
23          includes a high density distribution area movement  
24          predicting unit which predicts a destination to which the  
25          high density distribution area moves, based on the movement  
26          displacement obtained by said high density distribution  
27          block movement displacement calculating unit, and

28                 wherein said information distribution means  
29          includes an information distributing unit of a high density  
30          distribution area prediction type, which information  
31          distributing unit selects information corresponding to  
32          the destination of movement, predicted by said high density

33 distribution area movement predicting unit, and distribute  
34 the information.

1           17.     A server system for use in the information  
2 distribution providing system as set forth in claim 15,  
3 wherein said information distribution means include:

4           a distance/arrival time estimating unit which  
5 estimates the distance and/or arrival time from the high  
6 density distribution area to a place where the information  
7 distribution requester is located or a place specified  
8 by the information distribution requester, based on the  
9 calculation result obtained by said high density  
10 distribution area movement displacement calculating unit;  
11 and

12           an information distributing unit of a  
13 distance/arrival time estimation type, which information  
14 distributing unit distributes information corresponding  
15 to the distance and/or the arrival time estimated by said  
16 distance/arrival time estimating unit to the mobile  
17 information terminals within the high density distribution  
18 block.

1           18.     A server system for use in the information  
2 distribution providing system as set forth in claim 16,  
3 wherein said information distributing means includes a  
4 high-density distribution area movement prediction result  
5 notifying unit which notifies the information distribution

6 requester's terminal of the prediction result obtained  
7 by said high density distribution area movement predicting  
8 unit.

1        19.    A server system for use in the information  
2 distribution providing system as set forth in claim 15,  
3 said server system further comprising user reaction  
4 processing means which analyzes reaction of the service  
5 users' mobile terminals to information distributed from  
6 said information distributing means, and then outputs the  
7 analysis result to an external apparatus.

1        20.    A server system for use in the information  
2 distribution providing system as set forth in claim 15,  
3 wherein said distribution state predicting means includes  
4 an approximation function estimating unit which predicts  
5 the distribution state by estimating an approximation  
6 function with respect to change over time in the future  
7 distribution state based on a history of monitoring result  
8 in the past obtained by said distribution state change  
9 monitoring means.